ELECTRICITY INDUSTRY PARTICIPATION CODE
DISTRIBUTED UNMETERED LOAD AUDIT REPORT

VERITEK

For

WAIROA DISTRICT COUNCIL AND GENESIS ENERGY

Prepared by: Steve Woods

Date audit commenced: 8 May 2018

Date audit report completed: 24 May 2018

Audit report due date: 01-Jun-18

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EXECUTIVE SUMMARY

This audit of the Wairoa District Council **(WDC)** Unmetered Streetlights DUML database and processes was conducted at the request of Genesis Energy Limited (**Genesis**), in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied.

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1, which became effective on 1 June 2017.

The audit found six non-compliances.

The field audit found 15 wattage discrepancies in total. There doesn't appear to be any process in place to update the database when changes occur in the field.

The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum.

I have recorded non-compliance because the methodology for deriving submission information does not comply with Schedule 15.5. The NSP profile application contains the following in relation to the methodology for the submission of information to the RM:

The trading period in which the sunset/sunrise occurs is deemed to be the on/off period for the profile.

Profile shapes derived for each calendar month, for each of the three profiles.

It goes on to state that these times will not be used to calculate submission totals.

What this means in practice, is that if the "on" time is 18.20 and the off time is 07.13, the shape file will have values from 18.00 to 07.30. The shape file always contains whole trading periods spanning the "on" duration. The shape file does not have part trading periods. The shape files may vary from the actual on/off times by up to 29 minutes; however the profile rules allow this. I cannot quantify the error because I don't have independent on/off times for the region.

The future risk rating of 35 indicates that the next audit be completed in three months. I expect the remedial actions to take longer than three months, therefore I recommend an audit period of six months. The matters raised are detailed below:

AUDIT SUMMARY

NON-COMPLIANCES

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Deriving submission information	2.1	11(1) of Schedule 15.3	The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum Under submission of 824 kWh per annum due to two records not having an ICP Under submission of approx. 2,400 kWh per annum has occurred due to a ballast wattage difference. Process for deriving submission information does not comply with schedule 15.5	None	Medium	8	Investigating
ICP identifier	2.2	11(2)(a) of Schedule 15.3	Two records with blank ICP	Moderate	Low	2	Unknown
Description and capacity	2.4	11(2)(c) of Schedule 15.3	70 watt SON lamp should have ballast of 13 watts not 12 watts	Strong	Low	1	Unknown
Tracking of load changes	2.6	11(3) of Schedule 15.3	Process not in place to track load changes	None	Medium	8	Unknown
Database accuracy	3.1	15.2 and 15.37B(b)	The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum Under submission of 824 kWh per annum due to two records not having an ICP Under submission of approx. 2,400 kWh per annum has occurred due to a ballast wattage difference.	None	Medium	8	Unknown

Subject	Section	Clause	Non Compliance	Controls	Audit Risk Rating	Breach Risk Rating	Remedial Action
Volume information accuracy	3.2	15.2 and 15.37B(c)	The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum Under submission of 824 kWh per annum due to two records not having an ICP Under submission of approx. 2,400 kWh per annum has occurred due to a ballast wattage difference.	None	Medium	8	Unknown
					Future Risk Rating	**35**	

Future risk rating	1-3	4-6	7-8	9-17	18-26	27+
Indicative audit frequency	36 months	24 months	18 months	12 months	6 months	3 months

RECOMMENDATIONS

Subject	Section	Description	Action
Load description and capacity	2.4	Add lamp description and gear wattage to the database	

ISSUES

Subject	Section	Description	Issue
		Nil	

1. ADMINISTRATIVE

1.1. Exemptions from Obligations to Comply with Code

Code reference

Section 11 of Electricity Industry Act 2010.

Code related audit information

Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit observation

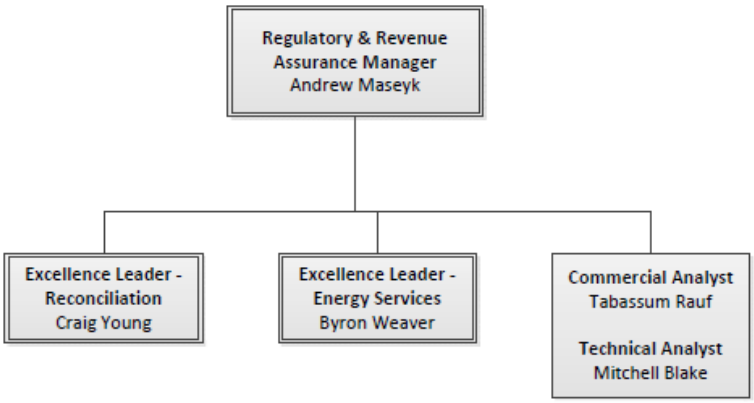
Section 11 of the Electricity Industry Act provides for the Electricity Authority to exempt any participant from compliance with all or any of the clauses.

Audit commentary

Genesis confirms that there are no exemptions in place relevant to the scope of this audit.

1.2. Structure of Organisation

Genesis provided the relevant organisational structure:



1.3. Persons involved in this audit

Auditor:

Steve Woods

Veritek Limited

Electricity Authority Approved Auditor

Other personnel assisting in this audit were:

Name	Title	Company
Craig Young	Excellence Leader- Reconciliation	Genesis Energy
Grace Hawken	Technical Specialist - Reconciliations	Genesis Energy

	Team	
Jason Grout	Network GIS and Data Manager	Eastland

1.4. Hardware and Software

The database used for reporting is an Access database hosted and managed by Eastland. Eastland performs a nightly server backup and on a fortnightly basis a tape backup is performed which are stored off-site. These are periodically restored to check readability. A mirrored server also exists in a separate building.

1.5. Breaches or Breach Allegations

There are no breach allegations relevant to the scope of this audit.

1.6. ICP Data

ICP Number	Description	NSP	Profile	Number of items of load	Database wattage (watts)
0000009071WW7AB	Wairoa DC	TUI1101	NST	28	530
0000009085WW6B6	Wairoa DC	TUI1101	NST	4	280
0000090126WW9	Wairoa DC	TUI1101	NST	1	70
0000090257WWA12	Wairoa DC	TUI1101	NST	1	100
0000090471WWF37	Wairoa DC	TUI1101	NST	4	370
0000090480WW0D9	Wairoa DC	TUI1101	NST	4	310
0000090778WWD9C	Wairoa DC	TUI1101	NST	3	300
0000090788WWD8B	Wairoa DC	TUI1101	NST	1	70
0000091017WW310	Wairoa DC	TUI1101	NST	3	470
0000092085WWE92	Wairoa DC	TUI1101	NST	1	70
0000093406WWAB9	Wairoa DC	TUI1101	NST	8	1040
0000901502WW92E	Wairoa DC	TUI1101	NST	2	140
0000901641WW448	Wairoa DC	TUI1101	NST	3	300
0000902361WWE8	Wairoa DC	TUI1101	NST	1	100
0000902851WWA0E	Wairoa DC	TUI1101	NST	5	490
0000903712WWAC4	Wairoa DC	TUI1101	NST	6	660

0000903861WWC56	Wairoa DC	TUI1101	NST	9	750
0000904511WW863	Wairoa DC	TUI1101	NST	8	710
0000906083WW144	Wairoa DC	TUI1101	NST	1	70
0000908111WWFE2	Wairoa DC	TUI1101	NST	4	400
0000908702WWF89	Wairoa DC	TUI1101	NST	5	350
0000908991WWAA5	Wairoa DC	TUI1101	NST	12	1250
0000911581WW845	Wairoa DC	TUI1101	NST	4	360
0000911731WW0F0	Wairoa DC	TUI1101	NST	1	150
0000912961WWC13	Wairoa DC	TUI1101	NST	6	900
0000918181WW8E4	Wairoa DC	TUI1101	NST	1	70
0000921782WWFAE	Wairoa DC	TUI1101	NST	1	70
0000924841WWCAE	Wairoa DC	TUI1101	NST	14	1460
0000925762WW394	Wairoa DC	TUI1101	NST	1	150
0000926782WWBCE	Wairoa DC	TUI1101	NST	10	1500
0000927432WWBDF	Wairoa DC	TUI1101	NST	1	70
0000928081WW0CC	Wairoa DC	TUI1101	NST	6	420
0000928661WWC70	Wairoa DC	TUI1101	NST	5	350
0000928691WWC67	Wairoa DC	TUI1101	NST	1	70
0000928921WW1DA	Wairoa DC	TUI1101	NST	4	310
0000929521WWC76	Wairoa DC	TUI1101	NST	7	810
0000932781WW6F	Wairoa DC	TUI1101	NST	1	70
0009073201WW32D	Wairoa DC	TUI1101	NST	4	310
0009073201WWF67	Wairoa DC	TUI1101	NST	5	380
0009157081WWB0B	Wairoa DC	TUI1101	NST	65	4550
0009801013WWDCO	Wairoa DC	TUI1101	NST	86	8790
0009808027WW792	Wairoa DC	TUI1101	NST	68	6450
0009808075WWFIF	Wairoa DC	TUI1101	NST	39	4210
0009823003WWDE0	Wairoa DC	TUI1101	NST	24	1770

0009902090WW2C6	Wairoa DC	TUI1101	NST	8	800
0009902111WW2CD	Wairoa DC	TUI1101	NST	5	350
0009903047WW3EE	Wairoa DC	TUI1101	NST	3	210
0009904020WW5B4	Wairoa DC	TUI1101	NST	4	280
0009912999WWD7F	Wairoa DC	TUI1101	NST	32	2450
0009921062WW979	Wairoa DC	TUI1101	NST	27	2670
0009926066WWC13	Wairoa DC	TUI1101	NST	2	170
0009927025WW3D6	Wairoa DC	TUI1101	NST	36	3110
0009928081WW3A3	Wairoa DC	TUI1101	NST	5	750
0009930036WW93A	Wairoa DC	TUI1101	NST	2	170
0090632461WW70	Wairoa DC	TUI1101	NST	6	420
0098080213WWA56	Wairoa DC	TUI1101	NST	41	7310
0099070331WWDA7	Wairoa DC	TUI1101	NST	7	550
0099070831WWEA9	Wairoa DC	TUI1101	NST	17	1430
0099081281WW22D	Wairoa DC	TUI1101	NST	20	1400
0099090101WWD25	Wairoa DC	TUI1101	NST	9	630
0099180751WWFA6	Wairoa DC	TUI1101	NST	14	1130
0099180971WW4F8	Wairoa DC	TUI1101	NST	45	3530
0099191182WW163	Wairoa DC	TUI1101	NST	15	1230
0099200151WWA31	Wairoa DC	TUI1101	NST	7	490
0099200271WW467	Wairoa DC	TUI1101	NST	25	1930
0099200991WWDD3	Wairoa DC	TUI1101	NST	52	3780
0099201301WW99E	Wairoa DC	TUI1101	NST	6	450
0099210911WW78	Wairoa DC	TUI1101	NST	19	1330
0099230201WW16	Wairoa DC	TUI1101	NST	12	1080

1.7. Authorisation Received

All information was provided directly by Genesis or WDC.

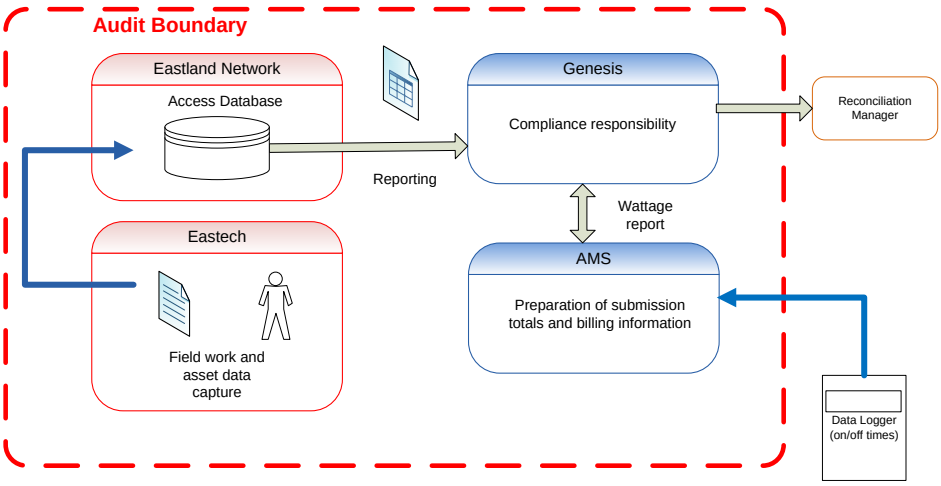
1.8. Scope of Audit

This audit of the WDC DUML database and processes was conducted at the request of Genesis, in accordance with clause 15.37B. The purpose of this audit is to verify that the volume information is being calculated accurately, and that profiles have been correctly applied

The audit was conducted in accordance with the audit guidelines for DUML audits version 1.1, which became effective on 1 June 2017.

Eastland data is contained in an Access database and Eastland provides reporting to Genesis on a monthly basis, detailing the total kW per ICP and the on/off times are derived by a data logger interrogated by AMS.

The diagram below shows the audit boundary for clarity.



The audit was carried out at Eastland's premises in Gisborne on May 8th 2018. A field audit was conducted of 152 items of load.

1.9. Summary of previous audit

Genesis provided a copy of the last audit report undertaken by Steve Woods of Veritek Limited in April 2017. The table below records the findings.

Table of Non-Compliance

Subject	Section	Clause	Non compliance	Status
Tracking of load changes	2.6	11(3) of schedule 15.3	Incorrect lamp count and some wattage discrepancies.	Still existing

Table of Recommendations

Subject	Section	Clause	Recommendation for Improvement	Status
			Nil	

1.10. Distributed unmetered load audits (Clause 16A.26 and 17.295F)

Code reference

Clause 16A.26 and 17.295F

Code related audit information

Retailers must ensure that DUML database audits are completed:

1. *by 1 June 2018 (for DUML that existed prior to 1 June 2017)*
2. *within 3 months of submission to the reconciliation manager (for new DUML)*
3. *within the timeframe specified by the Authority for DUML that has been audited since 1 June 2017.*

Audit observation

Genesis has requested Veritek to undertake this streetlight audit.

Audit commentary

This audit report confirms that the requirement to conduct an audit has been met for this database within the required timeframe. Compliance is confirmed

2. DUML DATABASE REQUIREMENTS

2.1. Deriving submission information (Clause 11(1) of Schedule 15.3)

Code reference

Clause 11(1) of Schedule 15.3

Code related audit information

The retailer must ensure the:

- *DUML database is up to date*
- *methodology for deriving submission information complies with Schedule 15.5.*

Audit observation

The process for calculation of consumption was examined and the application of profiles was checked. The database was checked for accuracy.

Audit commentary

Genesis reconciles this DUML load using the NST profile.

I checked the March 2018 extract provided by Eastland against the submission totals supplied by Genesis and found that the kW figures used for submission matched the database. Genesis uses the same "night" hours as they use for the NST profile to calculate total kWh. The rules for the NST profile state that the on/off hours will not be used to calculate submission totals. I agree that the profile on/off times should not be used to calculate submission totals because this will introduce errors into the calculation. The profile application contains the following in relation to the methodology for the submission of information to the RM:

The trading period in which the sunset/sunrise occurs is deemed to be the on/off period for the profile.

Profile shapes derived for each calendar month, for each of the three profiles.

What this means in practice, is that if the "on" time is 18.20 and the off time is 07.13, the shape file will have values from 18.00 to 07.30. The shape file always contains whole trading periods spanning the "on" duration. The shape file does not have part trading periods. The shape files may vary from the actual on/off times by up to 29 minutes; however the profile rules allow this.

I have recorded non-compliance because the methodology for deriving submission information does not comply with Schedule 15.5.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **section 3.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.1 With: Clause 11(1) of Schedule 15.3 From: 01-Apr-17 To: 30-Apr-18	The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum Under submission of 824 kWh per annum due to two records not having an ICP Under submission of approx. 2,400 kWh per annum has occurred due to a ballast wattage difference. Process for deriving submission information does not comply with schedule 15.5. Potential impact: High Actual impact: Medium Audit history: Once Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as none, because updates to the database are not occurring when lamps are changed or added in the field. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Due to the timing of the report, Genesis has yet to communicate the identified anomalies in the Audit. Genesis reviewed the deriving of submission process and agree this does not comply with 15.5, however Genesis use the NST profile on/off times with the intension of accuracy. Albeit there may be a very small discrepancy in the on & off interval we feel that the average annual burn hours (4240) presents bigger issues with under and over submissions during seasonality's and is far less accurate. Genesis would prefer the network to provide actual monthly burn hours/logger data.	10/2018	Investigating
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis, will be communicating the issues with the database to have these rectified.	10/2018	

2.2. ICP identifier and items of load (Clause 11(2)(a) and (aa) of Schedule 15.3)

Code reference

Clause 11(2)(a) and (aa) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *each ICP identifier for which the retailer is responsible for the DUML*

- *the items of load associated with the ICP identifier.*

Audit observation

The database was checked to confirm the correct ICP was recorded against each item of load.

Audit commentary

The database has the ICP identifier recorded against all but 2 items of load.

This is recorded as non-compliance.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.2 With: Clause 11(2)(a) of Schedule 15.3 From: 01-Apr-17 To: 30-Apr-18	Two records with blank ICP Potential impact: Medium Actual impact: Low Audit history: Once Controls: Moderate Breach risk rating: 2
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as moderate because they achieve compliance most of the time but there is room for improvement. The impact on settlement and participants is minor; therefore the audit risk rating is low. Under submission of 824 kWh per annum occurs due to blank ICPs

Actions taken to resolve the issue	Completion date	Remedial action status
Due to the timing of the report, Genesis has yet to communicate the identified anomalies in the Audit.	10/2018	Unknown
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis, will be communicating the issues with the database to have these rectified.	10/2018	

2.3. Location of each item of load (Clause 11(2)(b) of Schedule 15.3)

Code reference

Clause 11(2)(b) of Schedule 15.3

Code related audit information

The DUML database must contain the location of each DUML item.

Audit observation

The database was checked to confirm the location is recorded for all items of load.

Audit commentary

The database contains a unique identifier for each item of load and GPS coordinates are present for all items of load. This achieves compliance with this clause.

Audit outcome

Compliant

2.4. Description and capacity of load (Clause 11(2)(c) and (d) of Schedule 15.3)

Code reference

Clause 11(2)(c) and (d) of Schedule 15.3

Code related audit information

The DUML database must contain:

- *a description of load type for each item of load and any assumptions regarding the capacity*
- *the capacity of each item in watts.*

Audit observation

The database was checked to confirm that it contained a field for lamp type and wattage capacity, and included any ballast or gear wattage. Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority.

Audit commentary

Fields exist in the database for lamp make and model. I analysed the database and I found the lamp model field was "unknown" for all fields. The lamp model is added in a spreadsheet prior to a report being sent to Genesis.

Lamp wattage is populated and is correct. Gear wattage is added in the spreadsheet.

I recommend the lamp description and gear wattage is added to the database to ensure all information is in one location.

The Electricity Authority has published a schedule of ballast wattages for each make and model of lamp. The 70 watt high pressure sodium ballast is recommended as 13 watts. Eastland has used 12 watts and this needs to be updated to meet the schedule. Under submission of approx. 2,400 kWh per annum will be occurring due to this wattage difference.

Recommendation	Description	Audited party comment	Remedial action
Regarding Clause 11(2)(c) and (d) of Schedule 15.3	Add lamp description and gear wattage to the database	Genesis, will be communicating the issues with the database to have these rectified.	Identified

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(2)(c) of Schedule 15.3 From: 01-Apr-17 To: 30-Apr-18	70 watt SON lamp should have ballast of 13 watts not 12 watts Potential impact: Medium Actual impact: Low Audit history: None Controls: Strong Breach risk rating: 1
Audit risk rating	**Rationale for audit risk rating**
Low	The controls are recorded as strong because there was no published schedule previously and some published information contains 12 watts for 70SON ballasts. The impact on settlement is low because under submission has occurred by approximately 2,400 kWh per annum.

Actions taken to resolve the issue	Completion date	Remedial action status
Due to the timing of the report, Genesis has yet to communicate the identified anomalies in the Audit.	10/2018	Unknown
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis, will be communicating the issues with the database to have these rectified.	10/2018	

2.5. All load recorded in database (Clause 11(2A) of Schedule 15.3)

Code reference

Clause 11(2A) of Schedule 15.3

Code related audit information

The retailer must ensure that each item of DUML for which it is responsible is recorded in this database.

Audit observation

The field audit was undertaken of 152 lights using the statistical sampling methodology. The population was divided into the following strata:

1. New
2. Urban
3. Rural

Audit commentary

The field audit findings are detailed in the table below and show some discrepancies.

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
Urban					
1800;11.5;S/LIGHTS WAIROA - 4 MITCHELL R	20	20	-	1	One LED recorded as 70 SON
196;11.5;S/LIGHTS WAIROA - HILLCREST	2	2	-	-	
2064;11.5;S/LIGHTS WAIROA - CLYDE ST	24	24	-	2	One LED and one 70 SON recorded as 100 SON
410;11.5;S/LIGHTS WAIROA NTH - WAIHIRER	5	5	-	-	
4414;11.5;S/LIGHTS WAIROA - 71 LAHORE ST	52	52	-	4	4 LED recorded as 70 SON 2 70 SON recorded as 150 SON and 100 SON
492;11.5;S/LIGHTS WAIROA NTH - RUATANIW	6	6	-		
574;11.5;S/LIGHTS WAIROA - 97 LAHORE ST	7	7	-	1	One LED recorded as 70 SON
Rural					
114;11.5;S/LIGHTS MAHIA - NEWCASTLE ST	1	1	--	1	One LED recorded as 100 SON
1172;11.5;S/LIGHTS WAIROA STH - RAUPUNGA	8	8	-	-	
168;11.5;S/LIGHTS NUHAKA - NUHAKA	1	1	-	-	
2432;11.5;S/LIGHTS MAHIA - NUHAKA 908991	6	6	-	1	1 100 SON recorded as 150 SON
442;11.5;S/LIGHTS MAHIA - JOBSON'S	5	5	-	1	One LED recorded as 100 SON

Street/Area	Database Count	Field Count	Lamp no. difference	No of incorrect lamp wattage	Comments
456;11.5;S/LIGHTS MAHIA - NUHAKA 908111	2	2	-	1	One 70 SON recorded as 100 SON
New					
1008;11.5;S/LIGHTS NUHAKA - WHAKAKI	1	1	-	-	
2432;11.5;S/LIGHTS MAHIA - NUHAKA 908991	6	6	-	-	
410;11.5;S/LIGHTS MAHIA - NUHAKA 908702	2	2	-	-	
414;11.5;S/LIGHTS NUHAKA - NUHAKA CENTR	1	1	-	-	
456;11.5;S/LIGHTS MAHIA - NUHAKA 908111	2	2	-	1	1 150 SON recorded as 100 SON
528;11.5;S/LIGHTS NUHAKA - MORERE TEA	1	1	-	-	
TOTAL	152	152	0	15	

The field audit found some lamp wattage discrepancies. All load found in the field was recorded in the database, so compliance is recorded for this clause.

Audit outcome

Compliant

2.6. Tracking of load changes (Clause 11(3) of Schedule 15.3)

Code reference

Clause 11(3) of Schedule 15.3

Code related audit information

The DUML database must track additions and removals in a manner that allows the total load (in kW) to be retrospectively derived for any given day.

Audit observation

The process for tracking of changes in the database was examined.

Audit commentary

Any changes that are made during any given month take effect from the beginning of that month. The information is available which would allow for the total load in kW to be retrospectively derived for any day. On September 20th 2012, the Authority sent a memo to Retailers and auditors advising that tracking of load changes at a daily level was not required as long as the database contained an audit trail. I have interpreted this to mean that the production of a monthly "snapshot" report is sufficient to achieve compliance.

All new streetlight circuits are required to be metered; therefore, the tracking of load changes is only relevant to the existing unmetered circuits. As changes occur, the contractor should provide a hard copy form to Eastland. It appears this process is not being used because there are several incorrect lamp wattages and there are no LEDs recorded in the database at all, but nine were found during the field audit and many more were observed while driving in Wairoa.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 2.4 With: Clause 11(3) of Schedule 15.3 From: 01-Apr-17 To: 30-Apr-18	Process not in place to track load changes Potential impact: High Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as none, because updates to the database are not occurring when lamps are changed or added in the field. The impact is assessed to be medium, based on an estimated over submission of 20,000 kWh per annum

Actions taken to resolve the issue	Completion date	Remedial action status
Due to the timing of the report, Genesis has yet to communicate the identified anomalies in the Audit.	10/2018	Unknown

Preventative actions taken to ensure no further issues will occur	Completion date	
Genesis, will be communicating the issues with the database to have these rectified.	10/2018	

2.7. Audit trail (Clause 11(4) of Schedule 15.3)

Code reference

Clause 11(4) of Schedule 15.3

Code related audit information

The DUML database must incorporate an audit trail of all additions and changes that identify:

- *the before and after values for changes*
- *the date and time of the change or addition*
- *the person who made the addition or change to the database*

Audit observation

The database was checked for audit trails.

Audit commentary

Eastland demonstrated a complete audit trail of all additions and changes to the database information.

Audit outcome

Compliant

3. ACCURACY OF DUML DATABASE

3.1. Database accuracy (Clause 15.2 and 15.37B(b))

Code reference

Clause 15.2 and 15.37B(b)

Code related audit information

Audit must verify that the information recorded in the retailer's DUML database is complete and accurate.

Audit observation

The DUML Statistical Sampling Guideline was used to determine the database accuracy. The table below shows the survey plan.

Plan Item	Comments
Area of interest	Wairoa District Council
Strata	The database contains items of load in the Wairoa District Council area. The processes for the management of items of load are the same, but I decided to place the items of load into three strata, as follows: 1. New 2. Urban 3. Rural
Area units	I created a pivot table of the ICP in each area and I used a random number generator in a spreadsheet to select a total of 19 subunits.
Total items of load	152 items of load were checked.

Wattages were checked for alignment with the published standardised wattage table produced by the Electricity Authority.

Audit commentary

The DUML database auditing tool provided a result indicating the field data was 94.1% of the database data. This will result in an estimated over submission by 20,000 kWh per annum.

The field audit found 15 incorrect wattages.

Under submission of 824 kWh per annum is occurring due to two records not having an ICP.

The Electricity Authority has published a schedule of ballast wattages for each make and model of lamp. The 70 watt high pressure sodium ballast is recommended as 13 watts. Eastland has used 12 watts and this needs to be updated to meet the schedule. Under submission of approx. 2,400 kWh per annum will be occurring due to this wattage difference.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.1 With: Clause 15.2 and 15.37B(b) From: 01-Apr-17 To: 30-Apr-18	The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum Under submission of 824 kWh per annum due to two records not having an ICP Under submission of approx. 2,400 kWh per annum has occurred due to a ballast wattage difference. Potential impact: High Actual impact: Medium Audit history: None Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as none, because updates to the database are not occurring when lamps are changed or added in the field. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Due to the timing of the report, Genesis has yet to communicate the identified anomalies in the Audit.	10/2018	Unknown
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis, will be communicating the issues with the database to have these rectified.	10/2018	

3.2. Volume information accuracy (Clause 15.2 and 15.37B(c))

Code reference

Clause 15.2 and 15.37B(c)

Code related audit information

The audit must verify that:

- *volume information for the DUML is being calculated accurately*
- *profiles for DUML have been correctly applied.*

Audit observation

The submission was checked for accuracy for the month the database extract was supplied. This included:

- checking the registry to confirm that the ICP has the correct profile and submission flag

- checking the database extract combined with the burn hours against the submitted figure to confirm accuracy.

Audit commentary

Genesis reconciles this DUML load using the NST profile.

I checked the March 2018 extract provided by Eastland against the submission totals supplied by Genesis and found that the kW figures used for submission matched the database. The methodology for deriving submission information is not compliant, as recorded in Section 2.1. I don't have any data logger or SCADA data to compare the on/off hours to so I can't quantify this.

There is some inaccurate data within the database used to calculate submissions. This is recorded as non-compliance and discussed in **section 3.1** and **3.2**.

Audit outcome

Non-compliant

Non-compliance	Description
Audit Ref: 3.2 With: Clause 15.2 and 15.37B(c) From: 01-Apr-17 To: 30-Apr-18	The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum Under submission of 824 kWh per annum due to two records not having an ICP Under submission of approx. 2,400 kWh per annum has occurred due to a ballast wattage difference. Potential impact: High Actual impact: Medium Audit history: Once Controls: None Breach risk rating: 8
Audit risk rating	**Rationale for audit risk rating**
Medium	The controls are rated as none, because updates to the database are not occurring when lamps are changed or added in the field. The impact is assessed to be medium, based on the kWh differences described above.

Actions taken to resolve the issue	Completion date	Remedial action status
Due to the timing of the report, Genesis has yet to communicate the identified anomalies in the Audit.	10/2018	Unknown
Preventative actions taken to ensure no further issues will occur	**Completion date**	
Genesis, will be communicating the issues with the database to have these rectified.	10/2018	

CONCLUSION

The audit found six non-compliances.

The field audit found 15 wattage discrepancies in total. There doesn't appear to be any process in place to update the database when changes occur in the field.

The database accuracy is assessed to be 94.1% indicating an estimated over submission of 20,000 kWh per annum.

I have recorded non-compliance because the methodology for deriving submission information does not comply with Schedule 15.5. The NSP profile application contains the following in relation to the methodology for the submission of information to the RM:

The trading period in which the sunset/sunrise occurs is deemed to be the on/off period for the profile.

Profile shapes derived for each calendar month, for each of the three profiles.

It goes on to state that these times will not be used to calculate submission totals.

What this means in practice, is that if the "on" time is 18.20 and the off time is 07.13, the shape file will have values from 18.00 to 07.30. The shape file always contains whole trading periods spanning the "on" duration. The shape file does not have part trading periods. The shape files may vary from the actual on/off times by up to 29 minutes; however the profile rules allow this. I cannot quantify the error because I don't have independent on/off times for the region.

PARTICIPANT RESPONSE

Genesis, have yet to communicate these findings with the contracted party for remedial action, due the timing of the report.